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UNITED STATES PATENT AND TRADEMARK OFFICE  
(Case No. 01-1008-A)



In re Application of:

Malone et al.

Serial No.: 10/054,173

Filed: January 18, 2002

For: Method for Vacuum Deposition of  
Circuitry onto a Thermoplastic  
Material and a Vehicular Lamp  
Housing Incorporating the Same

Examiner: Choi, Jacob Y.

Group Art Unit: 2875

Confirmation No.: 4542

TRANSMITTAL LETTER

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450


Sir:

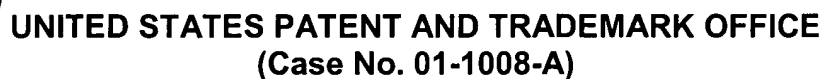
In regard to the above-identified application:

1. We are transmitting herewith the attached:
  - a. Brief on Appeal with Appendices A and B (all in triplicate)
  - b. Check in the amount of \$500.00
  - c. Return receipt postcard
2. Please charge any additional fees or credit overpayment to Deposit Account No. 13-2490. A duplicate copy of this sheet is enclosed.
3. CERTIFICATE UNDER 37 CFR 1.10 (EXPRESS MAIL): The undersigned hereby certifies that this Transmittal Letter and the documents hereinabove listed are being deposited with the United States Postal Service as "Express Mail Post Office to Addressee" being Express Mail No. EV839411848US in an envelope addressed to: Mail Stop Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 7<sup>th</sup> day of July, 2006.

Respectfully submitted,  
McDonnell Boehnen Hulbert & Berghoff LLP

By:

  
Grantland G. Drutchas  
Reg. No. 32,565



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## **BRIEF ON APPEAL**

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The applicants hereby file an original and three copies of this appeal brief.

**I. REAL PARTY IN INTEREST**

The real party in interest is Meridian Automotive Systems, Inc.

## **II. RELATED APPEALS AND INTERFERENCES**

This is the second appeal filed governing these claims. The first appeal was taken on August 20, 2004 after each of the then-pending claims had been rejected by the examiner primarily under 35 U.S.C. § 103(a). The Supervisory Examiner withdrew the rejection and re-opened prosecution on the merits in November 24, 2004. Applicants filed a response on May 24, 2005, which prompted a final rejection on January 25, 2006. The only remaining rejection to the claims is under 35 U.S.C. § 103(a).

No interferences have been declared.

### **III. STATUS OF CLAIMS**

Claims 1-6, 8-10, 12-23, 25, 26 and 28-34 are pending and are rejected, which rejections are appealed from. Claims 7, 11, 24 and 27 have been cancelled.

A clean set of the claims is attached in Appendix A.

#### **IV. STATUS OF AMENDMENTS**

The Supervisory Examiner withdrew the rejection and reopened prosecution on the merits in November 24, 2004. Applicants filed a response on May 24, 2005, which prompted a final rejection on January 25, 2006. The only remaining rejection to the claims is under 35 U.S.C. § 103(a).

## **V. SUMMARY OF THE INVENTION**

The invention relates *inter alia*, to a method for deposition of circuitry onto a lamp housing. In one of its aspects, the invention relates to vacuum deposition of circuitry for automotive applications. In another of its aspects, the invention relates to a vehicular lamp housing incorporating a circuit placed thereon by vacuum deposition. In another of its aspects, the invention relates to a vehicular lamp housing with vacuum deposition of circuitry powering light-emitting diodes. In another of its aspects, the invention relates to a vehicular lamp housing with a vacuum deposition of circuitry powering removable incandescent lamps. See p. 3, lines 16-24; p. 10, lines 9-14.

The thickness of the conductive layer, as claimed in some of the claims at issue, is 1 to 4 microns. P. 6, lines 3-6.

## **VI. ISSUES**

The ground for rejection appealed from are as follows:

- A. Whether, with respect to apparatus claims 16-23, 25, 26 and 28-30, the teachings of the primary references are "sufficient to show an obviousness to one having ordinary skill in the art at the time the invention was made to specify a workable range of the conductive layer" on a conductive lamp housing substrate where the claims specifically call for a conductive layer 1 to 4 microns thick that (1) is not disclosed or suggested by any reference of record; (2) has not been shown even prima facie to be achievable using prior art methods of record and (3) has been demonstrated by the Nykerk declaration to not be achievable using the prior art methods of record.
- B. Whether the 103(a) rejection by the Examiner of claims 1-6, 8-10, 12-15, and 31-32 to a method of manufacturing a conductive lamp housing by direct metallization of a generally non-planar surface, was appropriate, where (1) no such methods disclosed or suggested in the prior art and (2) the Examiner has not attempted to make a prima facie showing that such direct metallization of contoured lamp housings was disclosed or suggested by the references of record.
- C. Whether the 103(a) rejection by the Examiner of claims 33-34 was appropriate where none of the asserted prior art discloses the additional claim limitations set forth in these claims.
- D. Whether the drawings, in light of the specification, sufficiently disclose a plurality of compartments, each compartment being generally concave, and whether it is necessary to show in the drawings methods steps of forming within the same vacuum chamber the conductive material and reflective coating on the substrate & forming in the same vacuum chamber conductive material and reflective coating are formed on the substrate simultaneously.
- E. Whether the Examiner's rejection of the Applicants' Amendment After Final was appropriate, including the declaration of Todd Nykerk.

**VII. GROUPING OF THE CLAIMS**

- A. With regard to the rejection under 35 U.S.C. § 103(a) of the apparatus claims, claims 16-23, 25, 26 and 28-30 stand and fall together.
- B. With regard to the rejection under 35 U.S.C. § 103(a) of the method claims, claims 1-6, 8-10, 12-15 and 31-32 stand and fall together.
- C. With regard to the rejection under 35 U.S.C. § 103(a) of the method claims, claims 33-34 stand and fall together.

## VIII. ARGUMENT

### A. Apparatus claims 16-23, 25, 26 and 28-30 are not invalid under 35 U.S.C. § 103 (a) , as being unpatentable over any of the cited references

The Office Action rejected the aforementioned claims under 35 U.S.C. § 103(a) as unpatentable over Suzuki (USPN 6,290,380) in view of Elarde (USPN 4,532,152. See Office Action mailed January 25, 2006, pp. 2-12.

Neither Suzuki nor Elarde, alone or together, teach the inventions claimed in these claims:

1. Neither Suzuki nor Elarde teach a conductive layer deposited directly on a substrate that forms part of a lamp housing.
2. Neither Suzuki nor Elarde teach a conductive layer of 1 to 4 microns deposited on a substrate of a lamp housing.
3. Neither Suzuki nor Elarde contain any suggestion or motivation to combine the references in the manner suggested by the Examiner.

Suzuki, for example, does not teach a conductive layer deposited directly on a substrate that makes up part of the lamp housing. Rather, it teaches at best a flat arranging material 28 which is formed with conductors 29 mounted on a non-conductive layer to form a flexible print circuit or a flexible flat circuit. Col. 4, lines 18-23 and 41-42. As shown in Fig. 3, the flat arranging material is then mounted to a substrate 22 of a lamp housing such that the conductors 29 are oriented away from the substrate. As such, Suzuki teaches a non-conductive layer interposed between the conductive layer 29 and the substrate that makes up part of the lamp housing.

Suzuki simply does not teach a conductive layer deposited directly on a substrate that makes up part of the lamp housing. Elarde adds nothing to Suzuki in this regard, as it does not teach a lamp housing at all, much less a conductive layer deposited directly on a substrate that makes up part of the lamp housing.

Moreover, the Examiner has not cited a single reference that teaches a conductive layer of 1 to 4 microns as also required by the apparatus claims. Suzuki does not discuss the thickness of the conductors. For this, the Examiner has cited Elarde, which the Examiner describes as follows: "Elarde teaches that the depth of the conductive layer is approximately 0.003-0.010." The unit of measurement in Elarde, however, is inches, not millimeters. See Elarde, Col. 5, lines 5-11. A micron, of course, is 0.001 millimeter. Thus, the minimum thickness taught by Elarde (0.003 inches, or 76.2 microns) is more than **19 times the maximum thickness** (4 microns) claimed in the apparatus claims.

The Examiner argues, without support, that it would have been obvious to one having ordinary skill in the art at the time the invention was made to specify a workable range of the conductive layer of the substrate, citing Elarde. *Id.* The fact that Elarde teaches such a significantly thicker conductive layer should be applied teaches away from the present invention, and clearly renders these claims nonobvious.

Furthermore, there is nothing in Elarde or Suzuki that would lead a person of skill in the art to combine these references to obtain the claimed invention. Suzuki teaches that the benefit of using the flat arranging material is that the "workability in arrangement becomes high." Col. 5, lines 42-47. Using a conductive layer of only 1- 4 microns is the exact antithesis of a flat "arranging" material and would preclude any "workability" of the conductive layer. Nor would the process described in Elarde work with Suzuki's flat arranging material. Elarde teaches the application of a conductive material to a rigid "thermoplastic or thermosetting material" that is formed into circuits by "sand[ing], grind[ing], machin[ing] or otherwise abrad[ing] the metal layer" down to the surface of the thermoplastic or thermosetting material. Col. 6, lines 11-15. Even at its thinnest, as noted above, the Elarde conductive layer is more than 19 times the thickness of the claimed conductive layer. The person of ordinary skill in the art would not have any motiva-

tion or suggestion to combine this Elarde process with the teaching of Suzuki to obtain the claimed invention having the requisite thickness.

To the contrary, a person of ordinary skill in the art would understand the references to exclude the claimed conductive layer thickness of 1 to 4 microns deposited directly on the lamp housing. The Declaration of Todd Nykerk, submitted with the Amendment and Response After Final, explains in detail how a person of ordinary skill in the art would not understand the prior art to teach or suggest a conductive layer 1 to 4 microns thick deposited directly onto a lamp housing. See Nykerk Decl., ¶¶ 1-14.

Moreover, a conductive layer that is pre-formed on a circuit board or in a flexible flat circuit involves very different manufacturing considerations and can be made under tighter tolerances than a conductive layer deposited directly on a lamp assembly substrate. Lamp assembly substrates are larger components, often contoured, which make positioning and even distribution more difficult, particularly where only 1 to 4 microns of conductive material is being deposited.

The heavier construction called for by these prior art references was considered appropriate given the handling and operation conditions of many lamp assemblies. They are often handled by consumers, or in repair shops under relatively rugged conditions. Moreover, many such lamp assemblies are used in vehicles, where they are constantly subject to significant wear and tear. A conductive layer of 1 to 4 microns deposited directly on the lamp substrate, even if feasible given the prior art manufacturing processes, would not have been considered optimum in light of these conditions.

Given the foregoing, therefore, a conductive layer of 1 to 4 microns deposited directly on the lamp substrate is not simply selecting an optimum value of a result effective variable involving only routine skill. These references clearly do not teach, or render obvious, the claimed ap-

paratus. As such, claims 16-23, 25, 26, 28-30 and 35 should be found patentable over these references.

In view of the foregoing, the Applicants respectfully request reversal of this rejection.

**B. Method claims 1-6, 8-10, 12-15, 31 and 32 are not invalid under 35 U.S.C. § 103 (a), as being unpatentable over any of the cited references**

The Examiner has also argued that method claims 1-6, 8-10, 12-15 and 31-32 are invalid over these same references. The unique aspect of the invention claimed in these method claims is the direct metallization of a circuit directly onto a part of the lamp housing. Neither Elarde nor Suzuki – alone or in combination – teach this claimed invention.

The rationale set forth in the Office Action for rejecting these claims is (1) that Elarde teaches metallization of a generally non-planar surface and (2) that the metallization process taught in Elarde could be applied to the lamp housing of Suzuki. A review of the references reveals why this is not true. Furthermore, the Examiner has failed to show any motivation or suggestion to combine the cited references.

First, the Examiner's statement that "Elarde teaches a method of manufacturing a printed circuit board comprising a depositing particles by direct metallization to form a layer of conductive material on a contoured/generally non-planar surface of a substrate . . . " is based on an unaccredited and inaccurate definition of "generally non-planar" as "not lying in one plane."

The common understanding of "generally non-planar" would clearly exclude the structure of Elarde, which Elarde itself describes as "generally planar:"

According to a first embodiment of the present invention, a generally planar insulative substrate 20 is first formed as shown by way of example in Fig. 1.

Col. 3, lines 7-9. The generally planar structure of the substrate in Elarde is important, as once the entire surface, which contain channels in the substrate, is coated with a metal layer, the circuits are formed by abrading off the metal on the surface of the substrate so that only the metal in channels in the substrate remains. Col. 6, lines 11-25. Without the planar surface, the abrasion technique taught in Elarde could not be used to form the circuitry.

Even more problematic is the Examiner's statement that it would have been obvious to utilize the method of Elarde to apply a circuit to the lamp housing of Suzuki. The examiner does not explain how portions of the metal layer deposited using the process taught in Elarde could be abraded off the heavily contoured/generally non-planar surface of the lamp housing in Suzuki to form the circuits. The uneven contours of the Suzuki lamp housing is what leads Suzuki to use, by contrast to Elarde, the flat arranging material to deposit the circuits. The applicants submit that a person of ordinary skill in the art would not be motivated to combine these references, and that the references themselves contain no suggestion for such a combination.

In short, none of the cited references teach or suggest method of manufacturing a conductive lamp housing, comprising depositing particles by direct metallization to form a layer of conductive material on a contoured surface of the lamp housing to form an electrical spray circuit as required by the subject claims. The Examiner has not attempted to make out a prima facie case that a person of ordinary skill in the art would consider direct metallization of a lamp housing to be analogous to either (1) arranging a flexible print circuit or flexible flat surface on a substrate of a lamp housing or (2) direct metallization of a conductive layer on a generally planar surface.

In view of the foregoing, the applicants respectfully request reversal of this rejection.

**C. Method claims 33-34 are not invalid under 35 U.S.C. § 103 (a) , as being unpatentable over any of the cited references**

In addition to the lack of disclosure of the invention claimed in claim 1, the cited art also fails to disclose or render obvious the added limitations set forth in claims 33-34.

Claims 33 and 34 require that the conductive material and reflective material are formed on the substrate either within the same vacuum chamber or simultaneously in the same vacuum chamber, respectively. Neither of these limitations are taught or suggested in any of the cited references. Indeed, none of the cited references even teach the use of a vacuum chamber to form a reflective coating at all. The application of these materials in the same vacuum chamber, especially the simultaneous formation, provides a significant manufacturing efficiency that is simply not met by any of the cited prior art.

**D. The Examiner's Objections to the Drawings are Improper**

Although an earlier office action rejected claims 31-34 as introducing new matter and as lacking sufficient disclosure under 35 U.S.C. §112 (see Office Action mailed November 24, 2004), the Office Action mailed January 25, 2006 has withdrawn those objections, thus acknowledging that these claims are supported by the specifications.

Nevertheless, the Examiner has maintained an objection to the drawings as failing to sufficiently disclose elements found in those claims: "Therefore, applicant needs to show a plurality of compartments, each compartment being generally concave, the conductive material and reflective coating are formed on the substrate within the same vacuum chamber & the conductive material and reflective coating are formed on the substrate simultaneously in the same vacuum chamber." In light of the claimed subject matter and the drawings, this rejection is improper.

First and foremost, the plurality of compartments and compartments being generally concave is clearly shown in the drawings. See, e.g., Fig. 6. As for the conductive material being formed on the substrate within the same vacuum chamber and being formed simultaneously in the same vacuum chamber, the Applicants are at a loss as to how to describe these aspects of the method in the drawings. The description in the specification is alone sufficient. These method steps are not “structural details” as envisioned by *Ex parte Good*.

**E. The Nykerk Declaration Submitted With Applicants’ Amendment and Response After Final should have been allowed**

In the Office Action dated April 6, 2004, the Examiner refused to allow the Amendment and Response After Final, stating that the proposed claim amendments did not place the application in better form for appeal and that the Nykerk Declaration should be accorded little or no weight. The Nykerk Declaration should be part of the file.


The Nykerk declaration is not mere opinion, but clearly outlines the import of the cited references to a person of ordinary skill in the art, and points out why the Examiner’s arguments fail to establish a prima facie case of unpatentability.

**Conclusion**

Therefore, contrary to the Examiner's position, the claims are not rendered obvious by the cited references. Nor are the objections to the drawings proper. Accordingly, this rejection should be reversed, and the currently pending claims issued.

Respectfully submitted,

Date: July 7, 2006

  
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## **APPENDIX**

- A. CURRENT CLAIMS**
- B. NYKERK DECLARATION**

1. (previously presented) A method of manufacturing a conductive lamp housing, comprising depositing particles by direct metallization to form a layer of conductive material on a generally non-planar surface of a substrate that forms part of the lamp housing, in order to form part of one or more electrical spray circuits when said conductive material is connected to at least one or more power sources and one or more light sources.

2. (previously presented) The method of manufacturing a lamp housing of claim 1, wherein the direct metallization deposition of the layer of conductive material is deposited by vacuum deposition in a vacuum chamber.

3. (original) The method of manufacturing a lamp housing of claim 2, wherein the layer of conductive material is deposited by sputter vacuum deposition.

4. (original) The method of manufacturing a lamp housing of claim 2, wherein the layer of conductive material is deposited by cathodic arc vacuum deposition.

5. (original) The method of manufacturing a lamp housing of claim 2, wherein the layer of conductive material is deposited by E-beam vacuum deposition.

6. (previously presented) The method of manufacturing a lamp housing of claim 1, wherein the layer of conductive material is metal.

7. (canceled)

8. (original) The method of manufacturing a lamp housing of claim 1, further comprising a step of forming distinct electrical pathways in the layer of conductive material during deposition.

9. (original) The method of manufacturing a lamp housing of claim 8, wherein the distinct electrical pathways are formed by masking the lamp housing prior to deposition of the layer of conductive material on the lamp housing.

10. (original) The method of manufacturing a lamp housing of claim 1, further comprising a step of depositing a reflective coating on the substrate.

11. (canceled)

12. (original) The method of manufacturing a lamp housing of claim 1, further comprising a step of applying a spray seal on said substrate.

13. (original) The method of manufacturing a lamp housing of claim 1, further comprising a step of applying a protective coating to said conductive material.

14. (original) The method of manufacturing a lamp housing of claim 1, wherein the step of depositing a conductive layer further comprises depositing one or more terminals for contacting said light sources.

15. (original) The method of manufacturing a lamp housing of claim 1, wherein the step of depositing a conductive further layer

comprises depositing at least one connection for electrically connecting said conductive layer to said power sources.

16. (previously presented) A lamp housing comprising a substrate, further comprising a conductive layer for one or more electrical circuits deposited directly on said substrate, wherein said conductive layer is 1 to 4 microns thick.

17. (original) The lamp housing of claim 16, wherein the conductive layer is formed by vacuum deposition of the electrical circuits on said substrate.

18. (original) The lamp housing of claim 17, wherein the conductive layer is directly embedded in said substrate.

19. (original) The lamp housing of claim 16, further comprising one or more openings in said lamp housing for one or more light sources.

20. (original) The lamp housing of claim 17, further comprising one or more terminals attached to the conductive layer at said openings.

21. (original) The lamp housing of claim 17, wherein said light sources comprise one or more light emitting diodes.

22. (original) The lamp housing of claim 17, wherein said light sources comprise one or more incandescent lamps.

23. (original) The lamp housing of claim 16, further comprising a reflective coating.

24. (canceled)

25. (original) The lamp housing of claim 16, further comprising a spray seal.

26. (original) The lamp housing of claim 16, further comprising a protective coating on said conductive layer.

27. (canceled)

28. (original) The lamp housing of claim 16, further comprising a single connection for electrically connecting said circuits to one or more power sources.

29. (original) The lamp housing of claim 16, wherein said housing comprises one or more molded channels to facilitate receipt of said conductive layer.

30. (original) The lamp housing of claim 16, wherein said housing comprises one or more smooth corners to facilitate receipt of said conductive layer.

31. (previously presented) The lamp housing of claim 1 wherein the lamp housing is comprised of a thermoplastic material.

32. (previously presented) The lamp housing of claim 1 wherein the generally non-planar surface is comprised of a plurality of compartments, each compartment being generally concave.

33. (previously presented) The method of manufacturing a lamp housing of claim 10, wherein the conductive material and reflective coating are formed on the substrate within the same vacuum chamber.

34. (previously presented) The method of manufacturing a lamp housing of claim 10 wherein the conductive material and reflective coating are formed on the substrate simultaneously in the same vacuum chamber.

**PATENT**

**UNITED STATES PATENT AND TRADEMARK OFFICE**  
**(Case No. 01-1008-A)**

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<b>Serial No.: 10/054,173</b>	)	
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<b>Circuitry Onto a Thermoplastic</b>	)	
<b>Material and a Vehicular Lamp</b>	)	
<b>Housing Incorporating The Same</b>	)	

**DECLARATION OF TODD NYKERK**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

I, Todd Nykerk, hereby declare as follows:

1. I am an engineer employed by Meridian Autosystems, Inc. and one of the co-inventors named in the above-identified application
2. I have been working on developing lighting components for automobiles for 1 years.
3. I have reviewed the application, as well as the amendment after final, that is being submitted herewith. I have also reviewed the various references cited by the Examiner as the basis for rejecting the pending claims of this application, including Suzuki, Hancox, Forish, Harris, Crotzer and Longueville. In my view, neither the method

of manufacture of claim 1, or the product claimed in claim 16 would be obvious based on any of these references.

4. In my view, none of the cited references -- Suzuki, Hancox, Forish, Harris, Crotzer and Longueville -- teach a person of ordinary skill in the art how to make or use a conductive layer that is 1 to 4 microns thick that is deposited directly onto the substrate of the lamp assembly. Such a conductive layer would not be obvious, in my view, or a mere "optimum value" of a "result effective variable" or "workable range" based on any of these references.

5. Suzuki teaches that the conductive layer must be part of a "flat arranging material 28," a flexible print circuit or a flexible flat circuit, col. 4, lines 41-42. As shown in FIG. 3, and described at col. 4, lines 18-20, the flat arranging material 28 has three conductors formed on one side of a non-conductive surface. This "belt-like" flat arranging material 28 is then fixed within a concave groove 27 of the substrate, col. 4 lines 9-11. As such, the conductors do not come into direct contact with the lamp housing as called for by the claims. This process -- arranging the conductors on a belt like non-conductive material and affixing the belt-like material to the lamp housing -- is much more complex and requires more steps than directly affixing the conductors to the lamp housing. But Suzuki teaches away from the direct attachment of the conductors to the lamp housing.

6. Hancox teaches that the electrical contacts are to be made by "a cutting operation (e.g., piercing)" a single, preformed sheet substrate by heat deforming the substrate. See col. 4, lines 20-54. The cutting operation described in Hancox for making

the preformed sheet could not be used to cut conductors that are 1-4 microns thick. Thus, Hancox teaches away from the use of a conductor within the claimed range.

7. Moreover, Hancox teaches that the electrically conductive elements are separate components that have apertures through which pass heat deformable spigots for attachment to the lamp assembly housing (body 10), col. 3, lines 59-69. Using such heat deformable spigots for attachment would damage a conductive layer that is only 1 to 4 microns thick, and thus one of ordinary skill in the art would not expect that a conductive layer 1-4 microns thick could be used in the configuration taught in Hancox.

8. Harris teaches that a conductor is first applied to a flexible printed circuit board 43, col. 2, lines 24-36, rather than directly to the lamp housing as called for by the current claims. Moreover, as shown in Fig. 1, the flexible printed circuit board 43 is not in contact with the lamp housing 12, but instead is disposed away from the housing, thus preventing the conductive layer, even if exposed, from coming into direct contact with the lamp housing. Thus, Harris teaches away from the claimed inventions, which call generally for the conductive layer to be deposited directly on the lamp housing.

9. Forish teaches the use of a sealed backplate assembly 60 which “includes the circuitry for electrically interconnecting the three lamp socket assemblies.” Col. 4, lines 41-45. The electrical circuits are not deposited directly on the lamp substrate to form conductor 1-4 microns thick, but instead are “stamped from a thin sheet of electrically conductive material.” Col. 6, lines 39-50. Forish explicitly teaches the advantage of stamping such conductors: “This stamping process produces rigid

connectors in a relatively economic manner.” Col. 6, lines 49-50. Such stamping processes, as taught by Forish, cannot be used to make a conductor 1-4 microns thick.

10. Moreover, Forish actually teaches away from the invention – Forish teaches that a rigid conductor must be used, but the extremely thin conductive layer of the instant invention would not, by definition, be rigid. Nor would a rigid conductor be deposited directly on the lamp substrate, as it would be difficult to ensure adequate conformity between the rigid conductor and the lamp substrate. Thus, Forish clearly teaches away from the invention.

11. In short, none of these references teaches, nor renders obvious, a conductive layer that is 1 to 4 microns thick that is deposited directly onto the lamp housing.

12. In my view, the heavier construction called for by these prior art references may have been considered appropriate given the rigorous handling and operation conditions of many lamp assemblies. They are often handled by consumers, or in repair shops under relatively rugged conditions. Moreover, many such lamp assemblies are used in vehicles, where they are constantly subject to significant wear and tear. A conductive layer of 1 to 4 microns deposited directly on the lamp substrate would not have been considered optimum in light of these conditions.

13. Moreover, a conductive layer that is pre-formed on a circuit board or in a flexible flat circuit involves very different manufacturing considerations and can be made under tighter tolerances than a conductive layer deposited directly on a lamp assembly substrate. Lamp assembly substrates require larger components, often contoured, which

make positioning and even distribution of conductive material more difficult, particularly where only 1 to 4 microns of conductive material is being deposited.

14. For all of these reasons, therefore, a conductive layer of 1 to 4 microns deposited directly on the lamp substrate is not simply selecting an optimum value of a result effective variable or a specified workable range, involving only routine skill.

15. The methods claimed in the above-identified application are also not, in my view, taught by the cited references, alone or in combination. None of the references teach the deposition of a conductive layer directly on a lamp housing where the conductive layer is 1-4 microns thick. In my view, the references generally teach away from such direct deposition of a conductive layer directly on a lamp housing.

16. As described above, Suzuki teaches that a non-conductive layer be interposed between the conductors and the lamp housing.

17. Hancox also teaches away from direct deposition of a conductive layer of 1-4 microns on a lamp housing. As described above, Hancox teaches that the conductive layer is to be cut, which would (i) preclude direct deposition of any conductive layer and (ii) preclude the use of a conductive layer that is 1-4 microns thick. Moreover, Hancox teaches, as shown in Fig. 3, that the conductive layer (e.g., 13, 18) is not deposited on the lamp housing 10, but is spaced apart from the lamp housing. In fact, were one to attempt to deposit particles by direct metallization to form a layer of conductive material on the side of the lamp housing 10 where the separate conductive layer is positioned in Hancox, it would be virtually impossible to form a circuit.

18. Harris also teaches away from the direct deposition of a conductive layer 1-4 microns thick on the lamp housing. Instead, Harris teaches that a conductive layer must first be applied to a printed circuit board, which has conductive and nonconductive layers. Moreover, as shown by Fig. 1, the printed circuit board is not in direct contact with the lamp housing 12, except, possibly, at specific contact points.

19. Forish also teaches away from the invention. As described above, Forish teaches that the conductor is to be stamped out of a rigid sheet, not deposited by direct metallization. Moreover, the stamped conductor is placed in a backplate assembly, not attached directly to the lamp housing as called for by the claims.

20. Crotzer, first of all, teaches the manufacture of a circuit board, as opposed to a lamp assembly. Crotzer also teaches the "grafting" of an electrically conductive elastomer material to form circuits, col. 3, line 65 – col. 4, line 11, as opposed to deposition by direct metallization of the lamp housing. Such grafting techniques are much more costly and time-consuming than direct metallization. As such, Crotzer actually teaches away from direct-metallization of the lamp housing.

21. Similarly, Longueville refers to metal-coated materials only in describing the housing, which can then be used, according to the teaching, to provide a connection to ground to enhance shielding, Col. 9, lines 37-45. Providing a connection ground, as taught in Longueville, is a comparatively gross application. It does not require the precise distribution of deposited material required to provide electrical connections for electrical components such as the claimed light sources.

22. In addition, I understand that new claim 35 adds the limitation that the layer of conductive material be 1-4 microns thick. For the reasons discussed above in connection with the apparatus claims, in my view, none of the cited references teach any methods for depositing particles by direct metallization to form a layer of conductive material 1-4 microns thick on a contoured surface of a lamp housing, as called for by this claim.

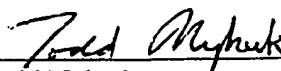
23. Thus, it is my opinion that none of the cited references teach the deposition of particles by direct metallization of a lamp housing, particularly a contoured surface of a lamp housing, as called for in the current claims. In short, none of the references teaches a lamp housing having a conductive layer, 1-4 microns thick, forming electrical circuits, deposited directly on the lamp housing. To the extent that any of the references are addressed to electrical circuits at all, they require either a much thicker (usually free-standing) conductive layer or require that the conductive layer be disposed within some sort of intermediate, non-conductive layer, that may then be attached to the lamp housing. Furthermore, none of the references teach the direct metallization of a lamp housing to form electrical circuits.

24. I hereby declare that all statements made herein of my own knowledge are true, that all statements made on information and belief are believed to be true. I understand that willful false statements and the like are punishable by fine or imprisonment or both (18 U.S.C. 1001).

Further the declarant sayeth not.

Amendment, p. 8  
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Todd Nykerk